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13. ABSTRACT *(Maximum 200 words)*

This contract supported my participation in the working group on the "Capturing Uncertainty in the Common Tactical/Environmental Picture" Department Research Initiative (DRI). The goal of the working group was to hone the scientific focus of the DRI during a pilot period preceding the larger expert workshop which took place in October, 2000. The ultimate goal of the DRI is to develop a formalism for capturing, calculating and representing uncertainty. By uncertainty we mean the environmental variability that is knowable and that we can simulate, the environmental variability that is knowable but that we cannot simulate, the environmental variability that is not knowable, and the error inherent in representations and calculations of the environmental field, acoustic field, and target estimation. My work consisted of active participation in the working group, preparation of supporting materials and presentations at working group meetings and at the expert workshop.

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FINAL TECHNICAL REPORT
ONR GRANT N00014-00-1-0770
ROBERT N. MILLER

Capturing Uncertainty in the Common Tactical/Environment Picture

I participated in the working group on the "Capturing Uncertainty in the Common Tactical/Environmental Picture" DRI. My participation consisted of attendance at the meetings, preparation of supporting materials and active contribution to the design and specification of the illustrative problem.

The stated goal of the DRI was to characterize, calculate and transfer uncertainty in the environment to calculations of acoustic fields and to the subsequent use of the acoustic fields in estimation and displaying of targets. Quantitative description of the transfer of uncertainty in the environment to calculations of acoustic fields, especially those involving prediction of environmental conditions, requires application of mathematical techniques drawn from statistics, probability theory and theory of stochastic processes. Similar techniques are required for data assimilation.

During the course of my funded participation in the steering committee for the DRI, I attended the meetings of the steering committee and contributed to the specifications of the problem. I consulted with other groups on ocean modeling and data assimilation considerations, and prepared several presentations for meetings of the steering committee and for the experts meeting held at Airlie House in October. Copies of the presentation and the poster are available on the web at the addresses shown below.

LIST OF PUBLICATIONS

"Bayesian Inference." With L. Stone. available in PDF or PowerPoint form from www.onr.navy.mil/sci_tech/chief/cuwg/Workshop/Posters/posters.html

"Methods for Propagation of Uncertainty." Available in PowerPoint form from www.onr.navy.mil/sci_tech/chief/cuwg/Workshop/Agenda/agenda.html